

A New Combination in South American *Polystichum*

GEORGE YATSKIEVYCH

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166

Among the species encountered during taxonomic studies of the polystichoid ferns (Dryopteridaceae) was a little-known South American taxon described by Fée (1873) as *Phanerophlebia aurita*. Examination of the few available specimens disclosed that it lacks both the imparipinnate fronds and multiseriate sori that distinguish *Phanerophlebia* from *Polystichum*. Baker (1891) was the first to note that this taxon was anomalous in *Phanerophlebia* and he transferred it to *Aspidium* subg. *Polystichum*, now universally given generic status as *Polystichum*. It is obvious from herbarium annotations that the Brazilian botanist Brade also concluded that the species was misplaced in *Phanerophlebia*, but he never published the necessary combination in *Polystichum*. While there are no doubts that this taxon is best placed in *Polystichum*, its affinities within the genus are obscure and it does not appear to be closely related to other Brazilian species.

Polystichum auritum (Fée) Yatskievych, stat. et comb. nov.—*Phanerophlebia aurita* Fée, Crypt. vasc. Brésil 2(suppl.):70 + t. 100, fig. 1. 1873.—*Aspidium auritum* (Fée) Baker, Ann. Bot. (Oxford) 5:313. 1891.—TYPE: Brazil, Est. Rio de Janeiro, source du Rio Soberbo, aux Orgues [in the Serra dos Orgãos, not the better-known Rio Soberbo in southern Est. Bahia], 3 Apr 1870, Glaziou 4431 (holotype P; isotypes P! (2 sheets), C, photos LL!, MICH!).

Specimens examined: Brazil, Est. Rio de Janeiro, Terezópolis, Pedra Assú, 1900 m, 30 Nov 1929, Brade 9516 (TEX); Serra dos Orgãos, Pedra Assú, 200 m, 31 Aug 1940, Brade 16513 (P, US).

In general, simply pinnate fronds in *Polystichum* are probably best considered an advanced feature that has evolved independently on several occasions. While many such species traditionally have been retained in *Polystichum sensu stricto*, four groups of simply pinnate polystichoid ferns have been treated as segregate genera by some authors. These are the New World (primarily Neotropical) *Phanerophlebia* (8 spp.) and the Asiatic genera *Cyrtogonellum* (4 spp.), *Cyrtomidictyum* (4 spp.), and *Cyrtomium* (ca. 30 spp.), which presumably represent independent specializations from different ancestral groups. The independent origins of *Phanerophlebia* and *Cyrtomium* have been studied in greatest detail, using both morphological (Wagner et al., 1974; Wagner, 1979) and molecular (Yatskievych et al., 1988) approaches.

Each of the four segregate genera is defined by a unique combination of advanced characters, such as anastomosing venation, multiseriate sori, and radican frond apices. All of these characters are individually also found in species of *Polystichum sensu stricto*, so the validity of recognizing such splinters at the generic level, other than to satisfy tradition, is suspect. On the other hand, there presently does not exist a comprehensive infrageneric classification within

Polystichum, so reincorporation of the segregates would not serve to clarify evolutionary relationships. Combinations are available for many of the species in *Polystichum*, but until further research provides a better understanding of interspecific relationships within the genus, I would prefer to postpone the transfer of the remaining taxa.

In *Polystichum*, once pinnate species can be found on most major land masses (excluding Australia and Antarctica). The largest number of such taxa is in Asia, where ca. 22 species in several complexes grow. As an example of the heterogeneity within this group, in his treatment of the genus for Japan, Ryukyu, and Taiwan (the only recent classification available for a large part of the genus), Daigobo (1972) distributed species with fronds simply pinnate or nearly so into 11 of 16 sections. The occurrence of other simply pinnate species by region may be summarized as follows: the Caribbean region (17 simply pinnate spp.); Malaysia (5 spp.); Philippines (4 spp.); mainland Africa (1 sp.); Madagascar (2 spp.); Madeira (1 sp.); South America (3 spp.); North America (3 spp.). Relationships among these various taxa remain obscure, but it is doubtful that they originated from a single ancestral group, given the diversity of morphologies present. Further studies are urgently needed.

ACKNOWLEDGMENTS

I am grateful to Frédéric Badré (P) for his assistance with matters of typification and location of types, and to Robbin Moran, David Barrington, and Alan Smith for helpful comments regarding the manuscript.

LITERATURE CITED

- BAKER, J. G. 1891. A summary of the new ferns which have been discovered or described since 1874. *Ann. Bot. (Oxford)* 5:181–222, 301–332, 455–500, 1 pl.
- DAIGOBO, S. 1972. Taxonomical studies on the fern genus *Polystichum* in Japan, Ryukyu, and Taiwan. *Sci. Rep. Tokyō Bunrika Daigaku, Sect. B* 15:57–80.
- FÉE, A. L. A. 1872. *Cryptogames vasculaires du Brésil, vol. 2: supplément et révision*. Paris: J. B. Baillièrre et Fils, Victor Masson et Fils, Berger-Levrault & Co.
- WAGNER, W. H., JR. 1979. Reticulate veins in the systematics of modern ferns. *Taxon* 28:87–95.
- , J. T. MICKEL, and L. D. GÓMEZ. 1974. *Polystichum dubium* and its bearing on the problem of generic relationships of *Cyrtomium* and *Phanerophlebia*. *Amer. J. Bot.* 61(5, suppl.):1974. Abstract.